

$$E=mc^2$$

## Physics Alum Dies in Columbia Disaster

**A**stronaut Lt. Col. Michael P. Anderson, 43, died with his six fellow crew members on Saturday morning, February 1, 2003, when the space shuttle Columbia disintegrated during re-entry after a 16-day mission. Anderson was the mission's payload commander, responsible for management of the scientific experiments aboard Columbia. His wife, Sandra, and daughters Kaycee, 9, and Sydney, 13, were in Florida to greet the shuttle when the tragedy occurred.

Col. Anderson was born on Christmas Day, 1959, in Plattsburgh, NY. He graduated from Cheney High School in Cheney, WA, in 1977 and earned his Bachelor's degree in Physics and Astronomy from the University of Washington in 1981.

In 1990 Michael earned his Master's degree in Physics from Creighton University. He worked on the degree while stationed at Offutt Air Force Base where he



**Lt. Col. Michael P. Anderson**

piloted the "Looking Glass" plane, SAC's Airborne Command Post.

Dr. Michael Cherney had Anderson in his high-energy nuclear physics course. Cherney said, "Although he was very bright, he was never the person who lorded it over people. He was a team player who wanted to see that everyone succeeded."

In 1994 Michael achieved his dream when he was selected by NASA for the space program. He told his research advisor, Fr. Thomas McShane, S.J., that NASA scientists were intrigued by the brain wave analysis he had done for his master's research.

Anderson had one previous space flight, a journey in January 1998 to the Russian Mir Space Station aboard the space shuttle Endeavour. He guided the docking of Endeavour with Mir and became the first African American aboard the Space Station.

After his trip to Mir, Michael visited Creighton to give a public lecture on his experience and to accept the 1998 Alumni Merit

Award from the Graduate School. He used the occasion to present the University and the Physics Department with items he had taken into orbit, including a Creighton pennant (see photo at lower left) and a spectroscope eyepiece from the Creighton Observatory telescope, used by Fr. William F. Rigge, S.J., and others, including many Creighton students. As they examined the universe with the spectroscope, they could not have imagined that it would one day orbit the Earth, taken there by a Creighton alum!

Michael frequently spoke to groups of young people, as when he visited students at Omaha's Jesuit Middle School, mostly African Americans, studying for entry into a college preparatory curriculum. He was and will continue to be a role model for children—a beautiful person—a hero.

Creighton has established a physics scholarship in honor of Astronaut Michael P. Anderson. His two children will receive free tuition, should they decide to attend Creighton University.



Anderson weightless inside Endeavour in 1998, holding a Creighton pennant.



Four members of the Columbia crew are seen here during the mission that ended in tragedy. Front: Anderson (left) with David Brown; Rear: Kalpana Chawla (left) with Israeli Ilan Ramon.

## Eighteen New Graduates

# Family of Physics Alums Continues to Grow



2002 Graduates: (from left) Lopez, Toney, Pham, Weiss, Stapleton, Wanner (wearing his invisibility cloak), and Stephenson. Photo taken during the Evening of Reflection at the home of Dr. Mike Cherney on April 28.

Since the last issue of the Physics Newsletter, eighteen new graduates have joined our family of physics alums. This includes two years of graduating classes, from May 2001 through December 2002.

In the graduating classes of May, August, and December of 2001, there were a total of eleven physics bachelor's degree recipients: **Leandro S. Anit, Jr.** from Omaha, Nebraska who has been accepted by the University of Nebraska School of Medicine for entry in the Fall of 2003; **Zulma X. Barrios** from Omaha, Nebraska who is a student at the Creighton School of Medicine; **Jmi L. Bassett** from Kahalu'u, Hawaii who is a student at the Harvard School of Dentistry; **Christopher M. Bowen** from Omaha, Nebraska who is studying for a master's degree in physics on a Teaching Fellowship at Creighton; **James R. Fiedler** from Scranton, Iowa who planned to pursue a doctoral program in mathematics at the University of Iowa; **Brian P. Hill** from Papillion, Nebraska who is studying for his

master's degree in physics on a Teaching Fellowship at Creighton; **Charles R. Hollman** from Rockford, Illinois who is a medical student at Midwestern University in Chicago; **Almira Koentjoro** from Indonesia; **Harpreet S. Parmar** from Lodi, California who is a student at the University of Nebraska School of Medicine; **Murray M. Thompson** from Pierre, South Dakota who is a student at the Creighton School of Dentistry; and **LeAnne (Lewis) Tiede** from Grand Island, Nebraska who is studying for her master's degree in physics at Creighton.

In the graduating class of May 2002, there were six physics bachelor's degree recipients: **Alejandro U. Lopez** from Colorado Springs, Colorado who planned to gain some entry-level experience in engineering before pursuing a master's degree; **James Pham** from Papillion, Nebraska who is applying to medical schools for entry in the fall of 2003; **Sarah C. Stapleton** from Denver, Colorado who received a Fellowship to the University of Colorado at Boulder where she is

pursuing a Ph.D. in civil engineering with a specialization in hydrological resources; **Megan K. (Schreiner) Toney** from Pocatello, Idaho who has been accepted to Law School in Chicago where she plans to begin her studies in the fall of 2003; **David L. Wanner** from Bismarck, North Dakota who is applying to the North Dakota School of Medicine for entry in the fall of 2003; and **Jan-Peter Weiss** from Bad Zwischenahu, Germany who is working toward a Ph.D. in aerospace engineering at the University of Colorado at Boulder where he received a Fellowship and a Teaching Assistantship.

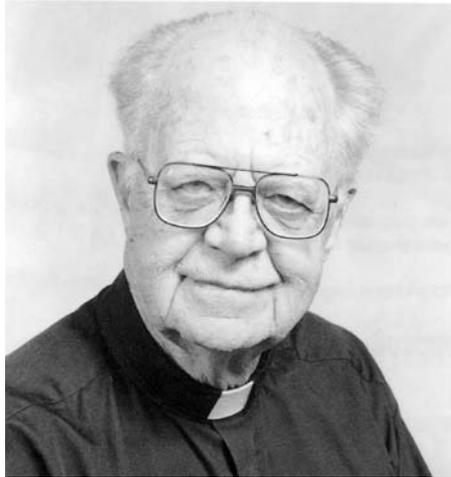
In this reporting period there was one master's degree recipient, **Joshua R. Stephenson** from Muskogee, Oklahoma. Joshua graduated in August 2002. His thesis research on "Trapping Efficiency and Stability of the Optical Stretcher" was done under the direction of Dr. Michael G. Nichols. Joshua held a Physics Teaching Fellowship at Creighton. He currently is employed as a health physicist with the Jaeger Corporation in Omaha.

# Rev. Edward A. Sharp, S.J., Dies at 80

On Saturday afternoon, May 19, 2001, Father Edward A. Sharp, S.J., a member of the Jesuit community at Creighton University, died at the age of 80. Many of our physics alums will remember Fr. Sharp since he taught mathematics at Creighton for 34 years, from 1957 to 1991, and was the first Director of Creighton's Computer Center.

On December 6, 2001, the Department of Mathematics and Computer Science dedicated the Sharp Conference Room to his memory. A memorial plaque installed at that time reads as follows.

"Fr. Sharp was the pioneering spirit behind the computer age at



Fr. Sharp

.....  
*Pioneering spirit behind the  
computer age at Creighton*  
.....

Creighton. He acquired and, on his own, learned to operate and program the first computer on campus, an IBM 1130, which occupied two rooms, coded data on punch cards, and had less than 60 kilobytes of memory. With the advent of computer courses, he taught programming and set up the first computer lab. Creighton is indebted to his leadership in this field."

The Mass of Christian Burial for Fr. Sharp was on Tuesday, May 22, at St. John Church. Burial was at Holy Sepulchre Cemetery in Omaha. The homily given by Fr. Larry Flannigan, S.J. may be found at:  
[http://magis.creighton.edu/cu\\_jesuits/inmemoriam/sharp.html](http://magis.creighton.edu/cu_jesuits/inmemoriam/sharp.html).

## New Science Complex Nearing Completion

The last *Physics Newsletter* announced groundbreaking for a six-story structure connecting Rigge Science and the Criss health sciences buildings. We are happy to report that construction is almost finished. Physics faculty, teaching fellows and staff began moving into their new offices during the Christmas holidays. Classes are being held in the building this semester.

The new space occupied by the Physics Department is on the ground floor near the main entrance to the building. Housed on this floor are physics faculty and department offices, a large

clubroom, a study area, and a tiered physics lecture room seating 66 students. The lecture room has an adjoining prep room which is much more spacious than what we had previously for storing and setting up physics lecture demonstrations.

Space occupied by the Physics Department in the Rigge Science building will be retained for physics use. Much of it will be remodeled. Most remodeling is scheduled for the summer. Additional physics laboratories will be added on the Rigge ground floor, taking advantage of space freed up by moving the offices and lecture room to the new building. More space will be available for physics use on the lower level of Rigge when the central heat exchange equipment is transferred to the new building.



At the connection between the new building and Rigge, a lounge area will be provided to promote interaction and collegiality among our students and faculty. Many other improvements in Rigge are being planned.

A dedication and naming ceremony for the new facility will take place later this year. Be sure to stop by for a visit when you're in the area. We would be delighted to give you a tour, or feel free to browse around on your own.

The *Physics Newsletter* is published periodically by the Creighton University Department of Physics.  
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## After 40 Years of Teaching and Service . . .

# Dr. Tom Zepf Retires

By Sam Cipolla

After 40 years of service to Creighton University, Thomas H. Zepf retired at the end of the 2001-2002 academic year. His accomplishments are numerous and significant. He came to Creighton as an Assistant Professor of Physics in 1962 after completing his doctoral research at Saint Louis University. For a total of 23 years, primarily from 1963-73 and 1981-1993, he served as chairman of the Physics Department. Due to his foresight and dedication, the period starting with his arrival became the wellspring of the Physics Department as we know it today.

*Dr. Zepf is shown here during the Physics Open House for High School Students in his first year of teaching at Creighton.*

*May 1963  
photo by  
Bazil Lazure.*



In his first semester of teaching at Creighton, Tom started the Physics Club. In May of 1963 the Club sponsored a Physics Open House for High School Students. This evolved into the annual Physics Field Day that has become a tradition at Creighton. Later, in 1981, he founded the Creighton University Chapter of Sigma Pi Sigma, the National Physics Honor Society.

By the end of 1964 Tom had

rewritten the physics course descriptions and designed the Bachelor of Science in Physics degree. Known as the professional degree, it has an undergraduate research requirement and more hours in physics than the standard bachelor's degree. He directed the research project of the first student to complete the degree.

During the mid-1960s, while Physics was still housed in the Administration Building, Tom was able to get additional space for labs and some renovation of the existing space. Also, he collaborated with faculty members in the Education Department on

obtaining grants from the National Science Foundation (NSF) to conduct five teacher-training institutes. The grants funded Summer and In-Service Institutes in Physics and Physical Science for school teachers from across the country. Among these was the first Harvard Project Physics Institute funded by NSF.

During that same period of time, Tom chaired the committee that designed the Physics Department's part of the Rigge Science Building. The Building opened in the spring of 1968. Some 30 years later, he helped to design the physics facilities of the new Science Center currently under construction.

While the Rigge Science Building was in the development stage, Tom wrote several successful grant proposals to NSF and other agencies, resulting in the funding of scientific equipment needed for the new physics teach-

ing and research labs. Similarly, in the mid-1990s, Tom coordinated the Physics Department's successful Kresge Grant proposal for scientific teaching and research equipment as part of Creighton's Success in Science Initiative.

When the Rigge Science Building opened in 1968, Tom started Creighton's Master of Science degree in Physics and he directed the thesis research of the first student to complete the program. In all, he has directed the master's research of 22 students, including 16 on the Plan A track. Four of these students have completed a Ph.D. Two others are currently enrolled in Ph.D. programs.

Between his terms as Chair of the Physics Department, Tom served for a year as Coordinator of Allied Health Programs for the College of Arts and Sciences, filled in for a semester as Assistant to the Dean of the College, and for six years chaired the Pre-Health Sciences Advisory Committee, serving as the chief health professions advisor for the College.

In all, Tom has served on over 30 committees at Creighton and has consulted or been affiliated with more than two dozen civic or educational groups.

Tom's early research was in the field of surface physics. His work confirmed theoretically predicted quantum interference effects in electron emission from metals. Since the early 1980s, he and his students have done pure and applied research in solid state physics and laser optics, supported in part by grants from Control Data Corporation and the 3M Foundation. Most recently he obtained grants from the U.S. Department of Commerce that enabled four undergraduate physics majors to participate in research at the National Institute

Fr. Schlegel  
congratulating  
Dr. Zepf  
on his  
promotion to  
Professor  
Emeritus of  
Physics



## Zepf Promoted to Professor Emeritus

At the President's Convocation on February 12, 2002, Dr. Tom Zepf was promoted to the rank of Professor Emeritus of Physics. The Convocation took place in St. John's Church. Fr. John P. Schlegel, S.J., President of Creighton University, presided. A citation read by the Dean of the College of Arts and Sciences, Dr. Timothy R. Austin, says in part:

*"Tom was chairman of the Department of Physics for an amazing 23 years. Throughout his career, he has worked energetically to build that department—its facilities, equipment and faculty resources—and to link it with the scientific community in the state and at the national level."*

### Dr. Zepf Retires . . . continued

of Standards and Technology in Gaithersburg, Maryland. Two of the students (see page 6) worked in the laboratory of William D. Phillips, 1997 Nobel Laureate in Physics. All have gone on to pursue post-baccalaureate study.

Tom was promoted to Professor of Physics in 1975. He was a recipient of the University's Distinguished Faculty Service Award in 1987, and the Dean's Award for Excellence in Teaching in 1997. At the President's Convocation on February 12, 2002, he was promoted to Professor Emeritus of Physics.

During his "retirement" Tom plans to continue his professional service activities which include chairing the Physics Section of the Nebraska Academy of Sciences, serving as a physics judge for the Metro Omaha Science and Engineering Fair and as a consultant to the Science

Center of the Omaha Children's Museum. On the national scene, Tom continues to serve as a member of the American Association of Physics Teachers' Committee on Science Education for the Public.

Tom is well known for the use of physics demonstrations in his teaching. His Light, Color, and Lasers course is wondrously built around exciting and marvelous optical demonstrations. Every Halloween the entire Creighton community is regaled by his Haunted Physics Laboratory extravaganza, a maze of electrical and optical phenomena featuring the infamous "department head," a living, talking human head without a body! During the Holiday Season he does a Laser Light Show choreographed to the Christmas music of Mannheim Steamroller.

Tom is also in demand as a magician. His knowledge of the-

atrical magic led him to develop a presentation on critical thinking concerning psychic phenomena and ESP that he has done numerous times over the past 25 years for groups of all ages, but especially for Freshman Seminar students at Creighton. More recently he has been doing workshops on "Teaching Physics with Magic" and "Mysteries from the Haunted Physics Lab" at national and regional meetings of the American Association of Physics Teachers.

Even though Tom is now retired, we are fortunate that he will remain an active participant in department affairs and serve as an important resource for the Creighton community. Some of his immediate plans include travel, work on family genealogy, community service, writing a "how to" book on the use of magic in teaching physics and, last but not least, continuing to serve as Editor of the *Physics Newsletter*.

### Department Hosts Two Retirement Receptions

Two retirement receptions were held to honor Dr. Zepf's career and his promotion to Professor Emeritus of Physics. On May 3, 2002, the Union Pacific Room was the site of a very well attended all-University reception. An engraved plaque from the physics faculty and staff was presented to Dr. Zepf in appreciation of his dedicated service and inspiration to the Department. On May 10, a Physics Department dinner reception was held in the Skutt Student Center. In addition to the Physics faculty, staff, and their spouses, there were alumni and former faculty in attendance.

Alumni at the dinner included **Morris Pongratz**, Ph.D. (BS '64), a member of the first class that Dr. Zepf taught in 1962; **David Bruening**, Ph.D. (BS '66), first recipient of the BS in Physics (professional degree) which was started by Dr. Zepf in 1964;

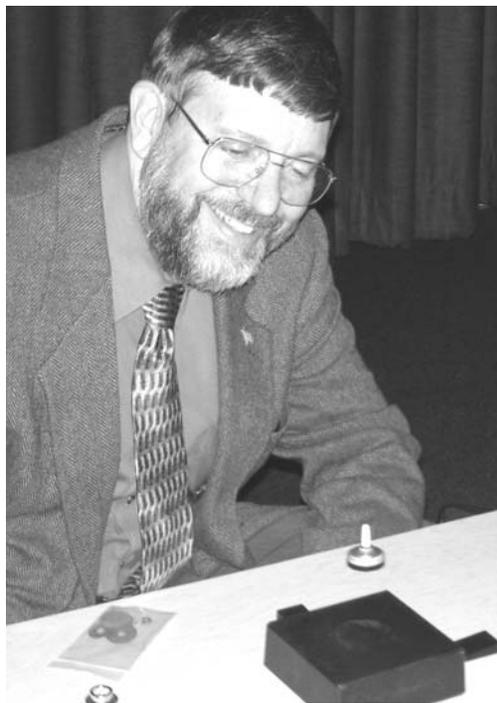
(Continued on Page 6)

# Nobel Laureate Lectures at Creighton

The Creighton Physics Department was host to a joint meeting of the Nebraska and Iowa Sections of the American Association of Physics Teachers on November 3, 2001. Our keynote speaker was William D. Phillips, a researcher in ultra-low temperature atomic physics at the National Institute of Standards and Technology (NIST).

Dr. Phillips is a recipient of the 1997 Nobel Prize in Physics which he shared with Steven Chu and Claude Cohen-Tannoudji for work they did independently on the development of methods to cool and trap atoms with laser light.

Two of our physics alums, **Jennifer Sebby** (BSPhy '99) and **Alicia (Dwyer) Cianciolo** (BSPhy '99), had the experience of working at NIST in the laboratory of Dr. Phillips while they were Creighton undergraduates. They had the opportunity to observe first hand his passion for physics and the genuinely good person that he is. His visit to Creighton gave us that same opportunity as we heard "The Story of Laser Cooling and Trapping" from one of those who wrote the story!



*Dr. Phillips is seen with a "Levitron" he used to demonstrate magnetic confinement during his lecture at Creighton University.*

(Continued from Page 5)

**Frank Nowak** (BS '70) with his wife; **Fr. Michael Liebl, O.S.B.** (BS '74); **Randy Blessing** (MS '94) with his fiancée; and **Jeff Gross** (MS '95, BS '93). Former faculty included **Fr. John Wymelenberg, S.J.** (physics), **Mr. Bazil Lazure** (physics) with his wife Gerry, **Dr. Michael Davies** (physics) and his wife, **Dr. Marcia Davies** (chemistry), and **Dr. Derek Fuller** (mathematics).

**Fr. Tom McShane, S.J.** gave the Invocation. **Dr. Sam Cipolla** presented Dr. Zepf with a booklet of remembrances from over fifty former students and colleagues. He was also presented with the **Fr. Clarence M. Wagener, S.J.** Distinguished Service Award by **Dr. Robert Kennedy**, Department Chair. Dr. Zepf himself presented new faculty member, **Dr. David Sidebottom**, with our General Physics textbook as a token of "transfer of position" (or "transfer of power" as the book is quite heavy). For a finale, Dr. Zepf narrated a slide show of his first ten years at Creighton, bringing back memories for many in attendance.

## Faculty Family Grows ... and Grows

Meet Eric and Timothy, youngest members of our faculty family!



**E**ric is the son of Dr. Janet Seger, Associate Chair of Physics, and her husband Steve. Eric was born on April 22, 2002. He likes to sleep soundly so he'll be ready for action when he's awake. Eric's vivacious 3-year-old sister, **Sophia**, loves having her little brother around to look after.

**T**imothy is the son of Dr. Mike Nichols, and his wife Jennifer.

Timothy was born on Nov. 29, 2001. His curiosity is growing with each passing day, not unlike that of 6-year-old **Joshua** who looks forward to exploring the world with his little brother in the years ahead.



# Students Build Lasers for Biophysics Research

The Biophysical Optics Laboratory and Research Program continue to grow under guidance of **Dr. Michael G. Nichols**, Assistant Professor of Physics. Three major projects are currently underway in which both undergraduate and graduate students are quite active.

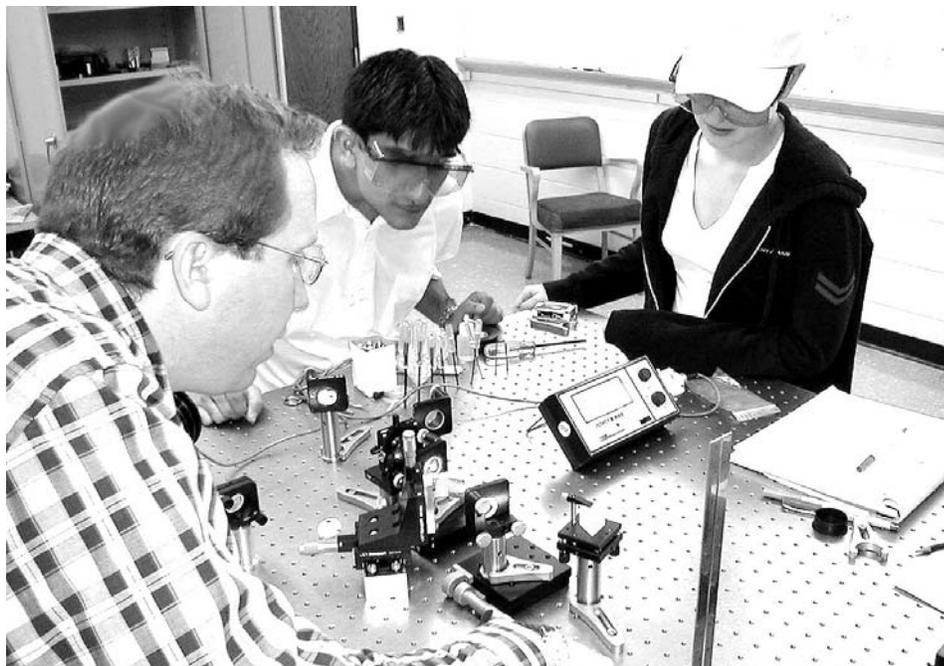
## **Development of a Confocal Laser Scanning Microscope**

After three years of work by many Creighton undergraduates, beginning with the initial layout by **Greg Kubicek** (BS '00), **Sadiq Zaman** (BS '00) and **Harpreet Parmar** (BS '01), and ending with the final design primarily due to **Dave Wanner** (BS '02), the team was able to get its first confocal images of fluorescent samples during the spring and summer of 2002. The design uses a pair of galvanometer mirrors to raster scan a laser beam across a biological sample (such as a monolayer cell culture, or a multicell tumor spheroid). The laser beam is focused to a diffraction-limited spot in the focal plane of a high numerical aperture objective. The resulting fluorescence is detected by an array of optically filtered photomultiplier tubes that are read simultaneously by a fast A/D card. All of the functions of the microscope are controlled by a Labview user interface. At the time of this writing, the team was in the process of characterizing the microscope and hoped to have some nice images to show for the work before the end of year 2002.

## **Design and Construction of a Femtosecond Ti:S Laser**

A Titanium Sapphire Oscillator is being designed and built as a source of femtosecond laser pulses tunable in the near infrared from 730 nm to 900 nm. The design is loosely based on that of Drs. Murane and Kapteyn, though the crystal holder and several

other optical components have been fabricated in-house. **Alok Shagal**, a senior, and **Megan (Schreiner) Tony** (BS '02) worked extensively on this project. Megan was able to get the Ti:S to lase and, among other things, was able to measure the tuning curve and noise of the laser. This project was supported by funds from



*Dr. Nichols (Left) is shown in the Biophysics Research Laboratory with senior Alok Shagal (center) and Megan (Schreiner) Tony (BS '02).*

a Success in Science (SIS) Initiative grant and then received a major upgrade in conjunction with the Nebraska LB692 funding of the "Optical Stretcher" project described below.

## **Optical Damage of Cells Trapped in an Optical Stretcher**

In the winter of 2001 we were fortunate to receive funding through Nebraska LB692 to build an optical stretcher at Creighton University, a collaboration between the Physics Department and the Department of Biomedical Science (Dr. Rick Hallworth, PI). Like optical tweezers, the stretcher is a laser-based device used to manipulate individual, living, bio-

logical cells. But in addition to trapping the cell with the laser, soft deformable dielectrics are actually stretched due to momentum exchange with photons. Each of the three investigators associated with this grant has a specific project. The Physics team hopes to be able to determine the optimal stretching configuration that

will minimize damage to cells trapped in the stretcher. The master's thesis research of **Joshua Stephenson** (MS '02) focused on the stability of the trap as a function of cell size as well as the distribution of optical stresses placed on a cell in this device. He presented some of this work at the April 2002 Meeting of the American Physical Society in Albuquerque, NM. The master's thesis research of **LeAnn (Lewis) Tiede** (BS '01) is also focused on this issue of near infrared photo-damage.

For a complete list of the students involved in various aspects of these projects see: <http://physicsweb.creighton.edu/faculty/mnichols/UGResearch.htm>

# Meet the Newest Members of Our Faculty

**D**r. **Phuoc Dai Ha** joined our faculty in the fall semester of 2001 to fill a temporary position as Assistant Professor of Physics. Dr. Ha received his BS degree in physics from the University of Hue, Vietnam. He holds an MS degree in Electrical and Computer Engineering and a Ph.D. in Theoretical Physics, both from the University of Wisconsin-Madison. For about eight years he was a researcher in the Institute of Theoretical Physics at the National Center for Science and Technology in Hanoi, Vietnam, and for about two years at the Joint Institute for Nuclear Research, Dubna, Moscow District, Russia. His research encompasses computational physics and theoretical high energy nuclear physics, including Baryon Magnetic Moments and Baryon Masses in QCD.

Dr. Ha and his wife, Ha, who has taught high school physics, are proud parents of three very active children. Their oldest son, Bi, is 17 and their daughter, Ni, is 14. They both attend Omaha's Westside High School. Their youngest son, Zi, is 6. Zi enjoys keeping the family occupied when he's not attending Paddock Road Elementary School in Omaha.

**Dr. David L. Sidebottom** joined our faculty in the fall of 2002 to fill a tenure-track position as Assistant Professor of



*Dr. Ha (right) next to his wife, Ha, and children (from left) Bi, Ni, and Zi. Photo taken at Hanscom Park during the Physics Club picnic in August.*

Physics. After receiving degrees from Kansas State University, he spent two years as a postdoc in Gothenburg, Sweden. Most recently he was employed as a research professor at the University of New Mexico. His past research activities have dealt primarily with the study of slow dynamical processes in glass-forming materials and transport of ions in disordered materials. He classifies himself as a chemical physicist, but believes the title "material scientist" is also suitable. His current interests include fundamental features of the glass transition and ionic relaxation in amorphous materials.



*Dr. Sidebottom with his wife, Lane, and their two dogs, Sassy (left) and Max.*

Dr. Sidebottom and his wife, Lane, celebrated their first year of marriage in July. Lane is a physical therapist who specializes in working with clients having cognitive disorders. She hails from southern California. Dave is from northeast Kansas. They moved to Omaha from Albuquerque where they both resided for about 10 years. Several pets accompanied them, which Dr. Sidebottom describes as: "Sassafras (Sassy) a 10-year-old female yellow lab who demands attention; Max, an 11-year-old Australian shepard who is good natured and beginning to slow down; Harley, a 4-year-old female calico who is tactilely defensive; and lastly, Madeline, a 22-year-old paint mare who is currently boarding at a stable south of town."

Dr. Sidebottom's hobbies include music (trumpet and banjo), glassworking and bike riding. Lane enjoys cross-country skiing and horseback riding.

They know the appropriate response to the question: "Red or green?" i.e., "What variety of chile pepper sauce (common in New Mexico) do you wish to have on your enchilada?"

## Bonnie Kelley Undergoes Surgery

On May 1, 2002, our department secretary for over twenty-five years, Bonnie Kelley, underwent major surgery. The procedure went well, but a complication required additional surgery and a long recuperation. As a result Bonnie says she "lost some weight—a good thing—but it was a tough way to do it." After returning to work, on a reduced schedule while regaining strength, she came down with pneumonia.

Bonnie wants everyone to know how grateful she is for the many prayers and expressions of support and encouragement that she has received. Join with us in praying for her full recovery.

## Physics Graduate Program Admits Ten New Students

Since the last *Newsletter*, ten new full-time students were admitted to our physics graduate program, each supported by a Teaching Fellowship or a Research Assistantship. Six entered in the fall of 2001, two in spring 2002 and two in fall 2002.

Four of the students received bachelors degrees in physics from Creighton: **Chris Bowen** (BS '01), **LeAnn (Lewis) Tiede** (BS '01), **Steve Gronstal** (BS '00), and **Brian Hill** (BS '01).

**Renan Cabrera** received his undergraduate degree from the Universidad Mayor de San Andres in La Paz, Bolivia and **Nilanthi Warnasooriya** from the University of Colombo, Sri Lanka. Closer to home, **Sarah Parks** received her degree from Loras College in Dubuque, Iowa, **Jennifer Reed** and **Chris Barajas** from the University of Nebraska at Omaha, and **Justin Morehead** from Hastings College, Hastings, Nebr.

We are pleased to be able to provide these fine students with financial support to enable them to pursue their graduate study in physics at Creighton University.

## Kennedy Receives Service Awards

During Founders Week 2003 Dr. Robert E. Kennedy, Associate Professor and Chair of Physics, received two awards for outstanding service to Creighton University, complementing the Saint Ignatius Award for Service to Others he received during Founders Week 2000!

Dr. Kennedy's most recent honors came on February 4th. At the 17th Annual Faculty Luncheon, he received the College of Arts and Sciences' Professional Service Award. Later, at the President's Convocation in St. John's Church, he received the University's Distinguished Faculty Service Award.

Since joining our faculty in 1966, Dr. Kennedy has contributed as a member of nearly every College and University committee, and he has chaired

and/or served as a secretary for many of them.

At the College level, he was Chair of the Physics Department from 1974 to 1981, and is serving again in that capacity since 1993, guiding our department's transition to a new era in the Science Center. As pointed out at the Arts and Sciences award ceremony, a

list of his service contributions to the College would require several pages.

The same can be said of his service at the University level. As an example, Bob was President of the University Faculty from 1978 to 1979 and again from 1988 to 1990. One of his



Dr. Kennedy

award sponsors noted that, as Faculty President, Dr. Kennedy "single-handedly reformed *Benefits at Creighton...*"

Students and faculty alike continue to benefit from his dedicated service.

## Cipolla Meets With Former Student in Ann Arbor

Dr. Sam Cipolla, Director of our Physics Graduate Program since 1981, visited with alum **Mike Lopez** (BS '98) in May 2002 at the University of Michigan in Ann Arbor where Mike is a research assistant working toward a Ph.D. in Nuclear Engineering. Dr. Cipolla was there to present a paper at the Tenth Symposium on Radiation Measurements and Applications.



Mike Lopez with Dr. Cipolla in Ann Arbor

After graciously treating him to dinner, Mike and his wife, Shannon, took Dr. Cipolla on a tour of the Intense Energy Beam Interaction Laboratory where Mike is doing his research. In a follow-up email to Dr. Cipolla, Mike describes his work as follows.

"My research is in the generation of high power microwaves. We use a microsecond electron beam accelerator to generate 1GHz microwaves at powers up to 300MW. We are looking at the physics that causes the microwave pulses to prematurely turn off. These include looking at plasma, magnetic field, electron beam, cathode, and power coupling behaviors of the magnetron tube." —Mike says he would be happy to field your questions about graduate study at the University of Michigan.

# More News About Our Graduates . . .

**Gerald P. Hart**, Ph.D. (BS '63) retired from the physics faculty of the Minnesota State University at Moorhead in December 1999. Jerry was one of three senior physics majors in Dr. Zepf's first year of teaching at Creighton. The others were **Gerald T. Schneider** (BS '63), who's retirement was reported in the last *Newsletter*, and **Richard E. Keating** (BS '63). Jerry chaired the physics department at Moorhead from 1975-79 and again for the last two years before his retirement. He and a colleague established MSU's physical science program for elementary education majors which now has an enrollment of 240 students a year! Jerry says he "particularly remembers taking Halliday and Resnick physics from Fr. Wagener and his daily quizzes, which proved to be a very effective learning tool." Upon retirement Jerry and his wife Yvonne moved to Cortez, Colorado and built a home on a piece of what was once the farm of Yvonne's parents. Both are heavily involved in volunteer work in the community. Travel, reading, greenhouse gardening, and amateur radio help to keep him busy.

**Arthur G. Bucknell** (BSPhy '67) is feeling well following successful brain surgery in 1996. During periodic check-ups, he's not offended when his doctors tell him that he has an empty head. Most recently Art has been working in home services, from repairs to testing and home inspections. He said his physics background has served him well. He hopes that his nephew who is attending Creighton and good at math will come to see how math blooms in the study of physics.

**David B. Jaksha** (MS '77, BS '74) stays in touch, especially with our laboratory manager, Bob Stoffel, who was the physics shop technician when Dave was here. After completing his master's

degree, Dave stayed on to be our laboratory manager. He was the person largely responsible for replacing pocket calculators with desktop computers (Apple IIe's) in the physics teaching labs. He was also a popular teacher of our Introductory Astronomy course. Dave left Creighton to become a member of the engineering staff at Kitt Peak National Observatory. He and his wife Pat have a son, Zachary, and daughter, Amanda. They reside in Tucson, Arizona.

**Christopher J. Kennedy**, Ph.D. (BSPhy '86), managed to maneuver his way through a close encounter with power lines but hit the ground much too hard while sky diving near Colorado Springs, CO. The accident occurred on December 9, 2001. Chris spent a month hospitalized with numerous broken bones. This was followed by a two-month stay for mending at the home of his sister Erin, a medical doctor specializing in plastic surgery. Erin lives in Dubuque, Iowa with her husband Peter, a seven-year-old son, three-year-old-twin daughters, and a one-year-old daughter. Chris and Erin are two of the five children of Mary and Dr. Bob Kennedy, Chair of the Physics Department. Chris is at home now in Colorado Springs, in good shape and back to work full-time with AT&T. He plans eventually to sky dive one more time! Chris got his Ph.D. in particle physics at Notre Dame, followed by a postdoctoral appointment at Yale University.

**Mark J. Wickham** (BSPhy '87) has been working for Motorola in China for the past several years. He stopped by the physics department in October 2001 while on a return visit to the States. Mark has learned to speak Mandarin. He manages 200 software engineers, all Chinese, who don't speak English! He's very grateful for his physics major and broad liberal education from Creighton.

**Paul F. Alexander** (BSPhy '82) and his family visited with Dr. Zepf during the President's Annual Alumni Picnic in June. Paul returned to Omaha to celebrate his 20-year class reunion during Reunion Weekend 2002.



*Alexander Family at the Alumni Picnic*

Paul was accompanied by his wife Denise and their children Rebecca and Ian. After graduating from Creighton, Paul worked on radio communications research and development for the Department of Defense in Washington, D.C. He and Denise were married in 1988. In 1990 he took a job with Inmarsat in London, England, working on mobile satellite communications systems. The family moved to Potomac, Maryland in 1997. Currently Paul is with Airia, Inc., a company whose goal is to provide live TV to aircraft passengers in flight.

**Erin Noteboom Bow** (BS '95) wrote to update her address and "catch us up a bit." Erin and her husband James are living in Kitchener, Ontario where they had just bought their first home. Her health is good now after a bout with chemotherapy that led to her dropping out of graduate school. She's happy to be able to focus on her marriage, her spiritual life, and her writing. She is Manager of Professional Education Programs at the University of Waterloo in Ontario. She writes: "We offer part-time graduate diplomas in computer science,

# . . . Achieving Satisfaction in Diverse Careers

optics and photonics, health informatics, organizational communication, and others.” Erin goes on to say that Creighton physics taught her “...to see the relations between the simple and the complicated, to learn from trying, to reach beyond what is within reach. It’s done a lot for me,” she says. “In fact, it’s probably saved my life.” More recently we heard through the grapevine that Erin has received almost \$30,000 in grants and is working on manuscripts for two books, one poetry and one physics. She has had poems published in several distinguished journals and her piece, “Poems for Carl Hruska,” received a Canadian Literary Award!

**Julienne M. Hill, Ph.D.** (BS ‘95) received her doctorate in condensed matter physics at Iowa State University in December 2002. She received early fame as a physicist at Creighton when her photo as the Haunted Physics Lab “Department Head” appeared in *The Omaha World Herald*.

**Erin D. Underwood, DO** (BS ‘96) was awarded the Doctor of Osteopathic Medicine degree in commencement exercises on June 1, 2001 at the Des Moines Osteopathic Medical Center. In July he started his residency in anesthesiology at the Rush-Presbyterian-St. Luke’s Medical Center in Chicago.

**Peter R. Colarco, Ph.D.** (MS ‘97) finished his doctorate in Atmospheric Sciences at the University of Colorado in June 2002. He writes: “My thesis work was on modeling transport and radiative properties of Saharan dust storms. Pretty cool stuff.” Pete is now working in the NASA Goddard Space Flight Center’s Atmospheric Chemistry branch.

**Jeffrey D. McClure** (MS ‘97) sent an email in October ‘02 with an update on his activities. Jeff is employed by Battelle, which has contracted him out to the Dept. of Energy. He works on the design

for the Pit Disassembly and Conversion Facility in Savannah, Georgia. Jeff says he would be happy to assist our graduate students who are seeking employment by getting them in touch with the right people at Battelle.

**Quinn M. Jones** (MS ‘98, BSPhy ‘94) emailed to say he left his job with Data Transmission Network in Omaha to take a position in May 2002 as Associate Vice President of Mid-America Agency Services Software and System Development. Quinn has fond memories of Fr. Wagener, mostly humorous, stemming from his student days at Creighton.

**Alicia M. Dwyer** (BSPhy ‘99) and **Matthew J. Cianciolo** (BSMP ‘98) were married on Saturday July 6, 2002 in a beautiful ceremony at St. Boniface Catholic Church in Alicia’s hometown of Elgin, Nebraska. Physics friends



*Alicia and Matt riding off in the rumble seat of their Model A Chariot.*

attending the wedding included **Paul Nienkamp** (MS ‘99), **Jenni Seby** (BSPhy ‘99), **Bob Strabley** (MS ‘99) and Dr. Tom Zepf. Alicia is an Aerospace Engineer working on Mars missions at the NASA Langley Research Center in Hampton, Virginia. She received her Master’s Degree from George Washington University in July 2001. Her research was on modeling the Mars atmosphere.

Recently Alicia was honored

during National Engineering Week (Feb. 16-22, 2003) as one of 16 young people representing “the new generation of engineers who are turning ideas into reality.” The sixteen were nominated for this recognition by their employers and professional societies. The story, with a photo of Alicia, appeared in the February 17 issue of USA Today.

Matt is in the fourth year of his medical studies at the University of Health Sciences in Kansas City. He will graduate in May with a Doctor of Osteopathic Medicine degree. Alicia and Matt celebrated Thanksgiving together in Greely, Colorado where Matt was doing a family practice rotation. After his graduation in May they are hoping he will be able to get into a residency program near their home in Virginia.

**Matthew J. Szymczak** (MS ‘98, BSPhy ‘96) and his wife, Melanie, are the proud parents of two beautiful boys, Maxwell and Mason. (Five M.S.’s in one family! –Ed.) Melanie gave birth to Max on May 6, 2002. His older brother Mason was born on October 1, 1999. Matt is employed by National Indemnity in Omaha, where **John Stahl** (MS ‘97) and **Dan Pongratz** (BS ‘96) are also employed.

**Paul K. Nienkamp** (MS ‘99) is a Graduate Teaching Assistant in the Department of History at Iowa State University where he is working on a Ph.D. in the History of Science.

**Jennifer S. Seby** (BSPhy ‘99) is a Graduate Research Fellow in the Department of Physics at the University of Wisconsin-Madison. Jenni presented a physics seminar at Creighton on her doctoral research entitled “Laser Cooling Basics, Spatial Heterodyne Imaging, and the Quest for a Bose Einstein Condensate.”

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# Productive Year for High Energy Research Group

Creighton's High Energy Nuclear Physics Research Group had a uniquely productive year with nine publications. The group has grown to 3 faculty members, an adjunct faculty member, a post-doc, 4 graduate students and 4 undergraduate students. Financial support for the research comes from the Department of Energy. The grant was renewed in July at the level of \$535,000 over the next 3 years (**Dr. Michael G. Cherney**, P.I.). Operation of and analysis of data

student **Nilanthy Warnasooriya**. Rebecca, post-doc **Dennis Reichhold** and summer student **Joe Byrne** gave presentations at the APS-DNP meeting in Maui. Dr. Reichhold has recently carried out a measurement of the size of excited nuclear matter in heavy ion collisions using kaon interferometry. Dr. Cherney, who coordinates the hardware control for the experiment, gave an invited presentation at CERN on the STAR controls system. Graduate student **Sarah Parks** is working on

recently become involved in the planning for the development of a photon calorimeter for the ALICE experiment at the European Center for Particle Physics (CERN). Former Creighton student **Dylan Thein** (BS '00) joined the STAR collaboration for his dissertation work at UCLA and former student **Marguerite Belt-Tonjes** (BSPH '94) completed her Ph.D. dissertation on STAR data. Graduate student **Renan Cabrera** spent the spring semester of 2002 doing computer simulations at Lawrence Berkeley National Laboratory under the direction of **Dr. Iwona Sakrejda**. Dr. Cherney has also been working on the controls system for ALICE.

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**Robert J. Strabley** (MS '99) is an officer in the United States Navy. Bob completed Nuclear Power School and Nuclear Prototype training that he says qualifies him "to supervise, maintain, and operate the Navy's nuclear reactors." After that he attended the Surface Warfare Officer School in Newport, RI where he "learned how to be a sailor (navigation, seamanship, administration, damage control, etc.)" In November 2001 he was assigned to the USS Harry S. Truman CVN 75, the Navy's newest aircraft carrier.

**Steven K. Brady** (MS '00) and wife, Sharon, recently announced a baby is on the way. Sharon is from Malaysia. They met at an International Students dinner in St. Louis where Steve is pursuing a Ph.D. in physics at Washington University. Steve is currently using nuclear magnetic resonance spectroscopy to study the absorption of hydrogen/deuterium into palladium metal. He says he is enjoying his work and counts that as "another incredible blessing along with the strong love he and Sharon have for each other."



Creighton physics majors, **Peter Dudley** (left) and **David Lynch**, are shown inspecting the cooling system for the magnet coils of the STAR Detector at Brookhaven. The main coils carry 4500 amps at 575 volts!

from the STAR experiment at Brookhaven National Laboratory on Long Island continues. STAR is an international collaboration of 400 physicists. **Dr. Janet Seger** directs the experiment's studies of the ultra-peripheral nuclear collisions. She gave an invited talk in Prague on particles produced in the large fields in the cases where nuclei just miss each other. Janet has been assisted by senior **Rebecca Redding** and graduate

the identification of excited charmed mesons in proton-proton collisions. She attended the STAR collaboration meeting and Quark Matter conference in Nantes along with **Fr. Thomas McShane, S.J.** and Dr. Cherney. Graduate student **Steven Gronstal** (BS '00) has been working on the control system for the photon calorimeters. Fr. McShane and Steve spent the fall semester working at Brookhaven. The group has